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STATION NOTES

CENTRAL STATES FOREST EXPERIMENT STATION

COLUMBUS 15, OHIO

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AN AERIAL PHOTO SCALE-PROTRACTOR

Foresters who use aerial photos to locate field plots or to help map small areas will find a ready aid in the photo scale-protractor recently developed for the Forest Survey of the Central States Region. The aerial photo scale previously described[1/] has been combined with a small protractor suitable for use on aerial photos. Using this combination the photo interpreter can (a) determine the approximate scale of his photos, (b) measure distances and angles on the photos, and (c) visualize the size of a 1/5-acre or 1-acre plot on photos of various scales.

The photo scale-protractor is printed on heavy transparent film and consists of three different scales for measuring distance and area on aerial photos (fig. 1). It may be used on photos of various scales ranging from 1:19,500 to 1:22,500 as shown. In addition the instrument has a scale graduated in inches and tenths, and a small protractor.

Scale A shows distances of a mile and fractions of a mile at the various scales. This is useful in determining the scale of photos, especially in areas where a perfect rectangular-grid survey has been made. Place the zero of line A over one section line and note the graduation nearest the next section line. If this is 20 the scale is 1:20,000. (Use the shortest distance between parallel land lines of course.) Where landmarks a full mile apart cannot be found, the 1/4- or 1/2-mile scale may be substituted. Distance between land lines should be checked against a good base map for precise work. The estimate of scale will be less accurate in mountainous areas and where surveys are irregular.

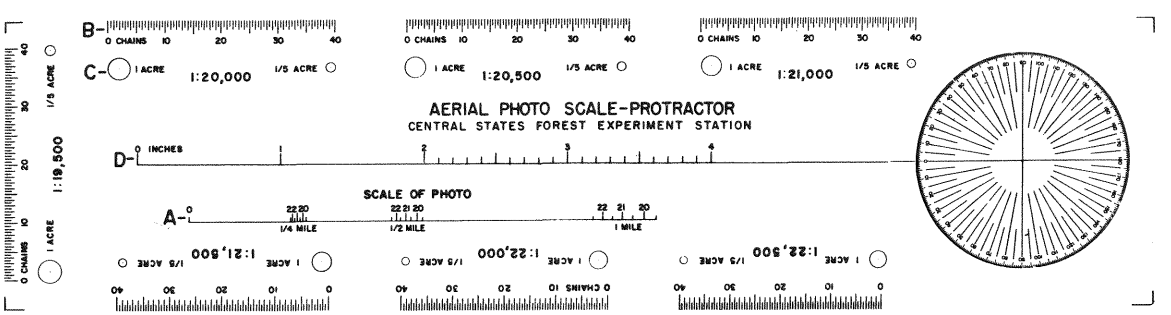

Figure 1.--The Aerial Photo Scale-Protractor.

1/ Karl E. Moessner. The Aerial Photo-Scale. Jour. Forestry 46(11):843-844, illus. November 1948.

Scale B represents chains and is used to measure distances. Be sure to use the scale corresponding to the estimated photo scale. You will find that placing the scale under one lens of the stereoscope while viewing the photos in stereo will give the most precise measurements.

Scale C shows the size of 1/5-acre and 1-acre plots on photos of various scales.

Scale D can be used to measure (in tenths of inches) the photo distance between successive camera stations parallel to the line of flight. The interpreter must know this distance between the principal and conjugate-principal points of a pair of photos when measuring heights with the parallax wedge.

The protractor is used in mapping from photos and in running traverses. Forest Survey crews must determine the bearing between a point of departure on the ground to a plot marked on the photo. However, since the orientation of a photo with magnetic north is seldom known, bearings cannot be read directly from the photos. So the protractor is used as follows.

Select a landmark on the photo such as a tree, a fence corner, or a point on a road, as the point of departure (fig. 2). Project a line through this point and along a fence line, road, or a line to another landmark to form a base line. Place the center of the protractor over the point of departure A with center line bisecting the plot center. Then read the angle between the center line (line AB on figure 2) and the base line. On the ground set up your compass at point of departure, turn off an angle from the base line corresponding to the angle measured on the photo, measure the distance in chains (scale B), and proceed to the plot on the indicated compass bearing.

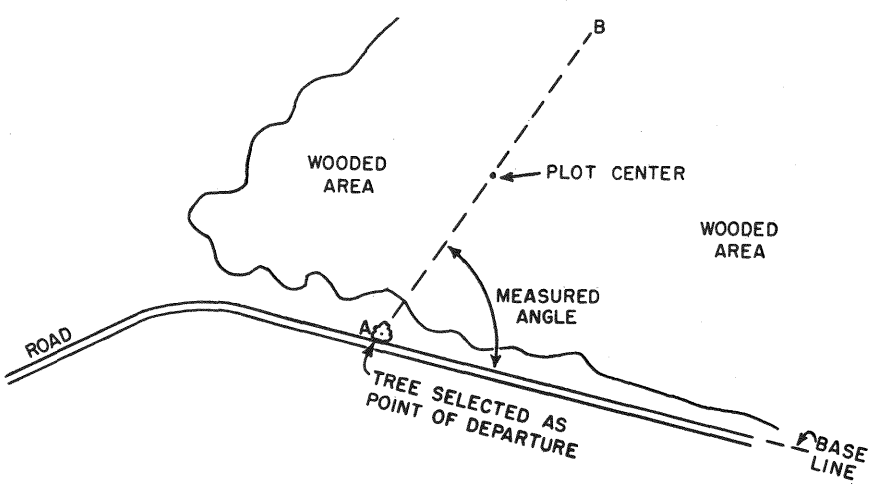

Figure 2.--Measuring angle on aerial photo.

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